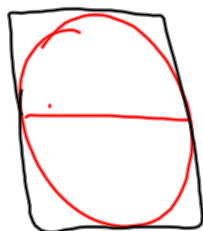


1)  $y = 2 - \frac{1}{2}x$ ;  $y = 0$ ;  $x = 1$ ;  $x = 2$  about  $x$ -axis <sup>rotate</sup>



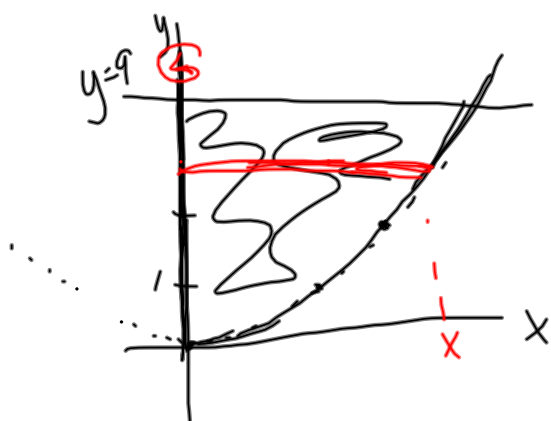
$$\text{Volume} = \int_1^2 \pi \left(2 - \frac{1}{2}x\right)^2 dx$$



$$= \pi \int_1^2 \left(4 - 2x + \frac{1}{4}x^2\right) dx$$

$$= \pi \left(4x - x^2 + \frac{1}{12}x^3\right) \Big|_1^2 = \pi \left(4 + \frac{8}{12}\right) - \pi \left(3 + \frac{1}{12}\right)$$

5)  $x = 2\sqrt{y}$ ;  $x = 0$ ;  $y = 9$  about  $y$ -axis  
 $x = 2\sqrt{y}$ ? .....  $y = \left(\frac{x}{2}\right)^2 = \frac{x^2}{4}$



What is  $r$ ?  
 $x = 2\sqrt{y}$

What changes (how are cross sections oriented)?  
 ---  $y$  --- (y-axis oriented)

$$V = \int_0^9 \pi (2\sqrt{y})^2 dy = \int_0^9 \pi (4y) dy$$